

6. Costs, Budget and Implementation



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As described in Chapter 3, Milwaukee's recommended bikeway system consists of a comprehensive network of on-street bikeways. This chapter presents a brief overview of the planning-level cost opinions for proposed bicycle improvements and maintenance activities as well as a discussion of implementation policies that can bolster and institutionalize the development of a high-quality bikeway network. Individual project cost opinions are provided in Appendix J, as are grant funding sources, potential local sources of revenue and an implementation strategy that presents a targeted methodology for how Milwaukee can implement projects under different funding scenarios. It should be emphasized that the City will always seek out state and federal grant opportunities and matching funds when implementing new facilities.

Cost Opinion Overview

This section summarizes planning level cost opinions associated with the recommended bicycle improvement projects. Cost opinions were provided by city of Milwaukee Staff and supplemented with costs from other similar bicycle master plans and experience in nearby communities. Table 4 shows costs for bicycle improvements. It should be noted that the cost opinions include options that may not be necessary for all projects and that actual costs may be lower than the averages used here. Additionally, the many of the maintenance costs included here are already being carried out by the city and may not be new expenses. All costs are in 2010 dollars and are estimates only; actual costs should be evaluated in the planning stage of individual projects.

Implementation Cost Opinions

The total implementation cost for on-street and off-street bicycle facilities of the Milwaukee Bicycle Plan is estimated at approximately \$8.6 million, as shown in Table

5. These costs do not include any land acquisition that may be necessary for projects.

Table 5: Summary Costs for Bicycle Facility Improvements

Improvement	Proposed (MI)	Cost
Bike Routes	9.11	\$45,550
Bike Lanes	153.36	\$5,908,194
Bike Boulevards	54.07	\$1,659,949
Raised Bike Lanes	4.77	\$1,061,229
Shared Use Paths	14.38	\$1,602,047
Path Connections	4 Ramps	\$1,000,000
Total	235.70	\$11,276,969

Table 6 (below) shows the project prioritization and construction and maintenance information for the recommended system. These costs summarize the detailed planning level cost opinions for individual facilities provided in Appendix J.

Short-term and medium-term facilities include bike lanes and signed routes. These facilities were chosen for early implementation based on their low-level of cost and relative ease of implementation. Both the bicycle lanes and signed routes should be implemented as soon as possible and can be implemented all at once.

Bicycle boulevards, raised bike lanes and shared use paths are included as long-term facility recommendations based on expense. These projects will need to be evaluated on a case-by-case basis and include neighborhood input to determine project prioritization.

The city may choose to prioritize facilities designated as medium or long-term facilities as opportunities arise. For example, bike lane striping is dependent on the purchase of a new paint truck. Once the truck is purchased, the city may proceed with bike lane installation immediately rather than waiting to first complete installation of all signs along proposed bicycle routes. A detailed maintenance budget is presented in Appendix J.

Table 6: Project Prioritization and Planning-Level Cost Opinions for Proposed Bicycle Projects

Phase	Proposed Bicycle Corridor Improvements		
	Length (miles)	Construction Cost	Annual Maintenance ¹
Short-Term (CMAQ Bike Lanes and Bike Routes)	63.37	\$2,135,926	\$382,277.86
Medium-Term (Remaining Bike Lanes)	99.10	\$3,817,828	\$679,925.10
Long-Term (Raised Bike Lanes, Bicycle Boulevards, Shared Use Paths and Grade-Separated Path Ramps)	73.22	\$5,323,321	\$889,979.04
Total	235.69	\$11,277,075	\$1,952,000.00

(1) Maintenance costs for on-street bikeways are included as part of the annual roadway maintenance budget. These costs are an estimate of maintenance required on existing and proposed bikeway facilities (e.g., bicycle wayfinding signage and more frequent roadway patching to maintain a quality riding surface).

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Table 4: Planning-Level Cost Opinions for Bicycle Projects

Item Description	Unit	Qtd	Unit Price	Notes
Bike Lanes (Roadway Re-stripping)				
Striping Removal	LF	15,840	\$2.02	3 lanes
Re-stripping	LF	26,400	\$0.02	5 lanes
Pavement markings	EA	20	\$175	Every 300'
Signage ¹	EA	10	\$250	Every 500'
Cost per Mile			\$38,525	
Construction Cost per LF:			\$7.30	
Bike Route				
Signage	EA	20	\$250.00	
Cost per mile:			\$5,000	
Construction Cost per LF:			\$0.95	
Raised Bike Lane²				
18" Mountable curb	LF	5280	\$12	
Class C Asphaltic Concrete	SF	52800	\$0.67	Assumes 5' lane each side
Asphalt color coating	SF	52800	\$0.67	Optional
6" Aggregate base	SF	52800	\$0.73	
Drainage grate relocation	EA	10	\$5,000	
Cost per Mile			\$222,480	
Construction Cost per LF:			\$42.14	
Bicycle Boulevard³				
Level 1: Signage	EA	20	\$250.00	
Level 2: Pavement Marking	EA	50	\$50.00	Every 100'
Level 3: Intersection Treatments				
Turn stop signs	EA	4	\$300	4 per mile
Bike signal actuation	EA	2	\$1,000	2 per mile
Level 4: Traffic Calming				
Traffic circles	EA	1	\$20,000	1 per mile
Cost per mile:			\$30,700	
Construction Cost per LF:			\$5.81	
Shared Use Path (10' with 2' shoulders)⁴				
Clear & Grub	SF	73,920	\$0.15	14'
4" Aggregate base	SF	63,360	\$0.60	12'
Asphalt Path-3" Depth	SF	63,360	\$1.20	12'
Centerline stripe	LF	5,280	\$1.00	6"
Cost per mile:			\$111,408	
Construction Cost per LF:			\$21.10	
Path Connections⁵				
Construction Cost per ramp:			\$250,000	

(1) MUTCD Guidance: The BIKE LANE (R3-17) sign spacing should be determined by engineering judgment based on prevailing speed of bicycle and other traffic, block length, distances from adjacent intersections, and other considerations.

(2) Estimate is exclusive of raised parking option

(3) Note: Level 5 Bicycle Boulevard treatments (traffic diversion) are not included, as the majority of bicycle boulevards will not require traffic diversion.

(4) Note: planning level estimates do not include ROW acquisition costs; costs for potentially required bridges or retaining walls; or costs for amenities including lighting, benches, bicycle parking, interpretive kiosks, etc.

(5) Note: planning level estimates for a 10' wide paved path connecting a grade-separated path to a street or other path connection; actual costs may vary widely depending on grade change and other topographical features.

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Sample Budget

Tables 7 and 8 on the following pages display a sample budget for the Milwaukee Bicycle Program for 2010 through 2015. These budgets are suggestions and are not proposed budgets. As is the case with all City departments, the budget for bicycle facilities, maintenance and programs will have to be evaluated on an annual basis. The budget focuses on the primary recommendations of this plan including expanding and maintaining the bicycle network; increasing the bicycle program staff; and adding funding for education, marketing, and encouragement programs. While this budget addresses many of the recommendations made in this plan, it is not a complete budget for the bicycle program, and there are many recommendations within this plan that are not included.

This budget includes implementation of the full bicycle network recommended in this plan by 2015:

- 9.11 miles of bike routes added in 2011 and 2012
- 153.36 miles of bike lanes added in 2011 through 2014
- 54.07 miles of bike boulevards added in 2011 through 2014
- 4.77 miles of raised lanes added in 2012 through 2014
- 14.38 miles of paths added in 2012 through 2014
- 4 path connections added in 2012 through 2015

As the network is expanded, increased maintenance costs are reflected in the following year. Facility maintenance costs are based on national best practices, and include regular surface patching, sign replacement, and restriping as highlighted earlier in this chapter. In practice, Milwaukee has spent considerably less money to maintain its facilities than is budgeted here.

The budget includes increased personnel for the bicycle program every year. Currently the city employees the equivalent of 1/3 of one full time employee dedicated to bicycle issues. This plan and the budget call for increasing full-time staff to the equivalent of two full time employees and 2,000 hours of intern funding per year.

Potential federal, state and local funding sources are presented in Appendix N.

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Table 7: Sample Milwaukee Bicycle Program Budget – 2010 – 2012

			2010		2011		2012	
	Cost	per Unit	Units	Subtotal	Units	Subtotal	Units	Subtotal
Operations & Maintenance								
On-Street Facilities								
Bike Routes	\$1,025	Mile	65.45	\$66,892	65.45	\$67,086	70.01	\$71,760
Bike Lanes	\$6,861	Mile	52.47	\$351,832	52.47	\$359,997	90.81	\$623,047
Bicycle Boulevards	\$6,650	Mile	0	\$0	0	\$0	13.52	\$89,908
Other (raised lanes...)	\$6,971	Mile	0	\$0	0	\$0	0	\$0
Off-Street Facilities								
Maintenance	\$2,500	Mile	3.1	\$7,750	3.1	\$7,750	3.1	\$7,750
Support Facilities								
Bike Parking	\$200	Rack	0	\$0	50	\$10,000	50	\$10,000
Marketing								
Printing				\$0				
Bike Map				\$0		\$7,000		\$7,000
Pamphlets				\$0		\$5,000		\$5,000
Media				\$0		\$10,000		\$10,000
Mini-grants				\$0		\$10,000		\$10,000
SmartTrips Program				\$0		\$33,000		\$33,000
Bike To Work Week				\$0		\$5,000		\$5,000
Education								
Classes				\$0		\$5,000		\$5,000
O&M Subtotal				\$418,724		\$503,724		\$791,146
Capital								
On-Street Facilities								
Bike Routes	\$5,000	Mile	0	\$0	4.56	\$22,800	4.55	\$22,750
Bike Lanes	\$38,525	Mile	0	\$0	38.34	\$1,477,049	38.34	\$1,477,049
Bicycle Boulevards	\$30,700	Mile	0	\$0	13.52	\$415,064	13.52	\$415,064
Other (raised lanes...)	\$222,480	Mile	0	\$0	0	\$0	1.59	\$353,743
Hazard Elimination						\$10,000		\$10,000
Off-Street Facilities								
Paths	\$111,408	Mile	0	\$0	0	\$0	4.79	\$533,644
Path Connections	\$250,000	Ramp	0	\$0	0	\$0	1	\$250,000
Support Facilities								
Bike Parking	\$200	Rack	0	\$0	50	\$10,000	50	\$10,000
Capital Subtotal				\$0		\$1,562,880		\$2,065,766
Personnel								
Bike & Ped Coordinator	\$50,000	Employee	0.33	\$16,500	0.67	\$33,500	1	\$50,000
Interns	\$14	Hour	0	\$0	500	\$7,000	1,000	\$14,000
Fringe Benefits	\$0			\$7,425		\$18,225		\$28,800
Personnel Subtotal				\$23,925		\$58,725		\$92,800
Annual Total:				\$893,048		\$4,638,799		\$6,992,228

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Table 8: Sample Milwaukee Bicycle Program Budget – 2013 – 2014

			2013		2014		2015	
	Cost	per Unit	Units	Subtotal	Units	Subtotal	Units	Subtotal
Operations & Maintenance								
On-Street Facilities								
Bike Routes	\$1,025	Mile	74.56	\$76,424	74.56	\$76,424	74.56	\$76,424
Bike Lanes	\$6,861	Mile	129.15	\$886,098	167.49	\$1,149,149	205.83	\$1,412,200
Bicycle Boulevards	\$6,650	Mile	27.04	\$179,816	40.56	\$269,724	54.07	\$359,566
Other (raised lanes...)	\$6,971	Mile	1.59	\$11,084	3.18	\$22,168	4.77	\$33,252
Off-Street Facilities								
Maintenance	\$2,500	Mile	7.89	\$19,725	12.68	\$31,700	17.48	\$43,700
Support Facilities								
Bike Parking	\$200	Rack	50	\$10,000	50	\$10,000	50	\$10,000
Marketing								
Printing								
Bike Map				\$7,000		\$7,000		\$7,000
Pamphlets				\$5,000		\$5,000		\$5,000
Media				\$10,000		\$10,000		\$10,000
Mini-grants				\$10,000		\$10,000		\$10,000
SmartTrips Program				\$33,000		\$33,000		\$33,000
Bike To Work Week				\$5,000		\$5,000		\$5,000
Education								
Classes				\$5,000		\$5,000		\$5,000
O&M Subtotal				\$1,086,491		\$1,382,569		\$1,678,648
Capital								
On-Street Facilities								
Bike Routes	\$5,000	Mile	0	\$0	0	\$0	0	\$0
Bike Lanes	\$38,525	Mile	38.34	\$1,477,049	38.34	\$1,477,049	0	\$0
Bicycle Boulevards	\$30,700	Mile	13.52	\$415,064	13.51	\$414,757	0	\$0
Other (raised lanes...)	\$222,480	Mile	1.59	\$353,743	1.59	\$353,743	0	\$0
Hazard Elimination				\$10,000		\$10,000		\$10,000
Off-Street Facilities								
Paths	\$111,408	Mile	4.79	\$533,644	4.8	\$534,758	0	\$0
Path Connections	\$250,000	Ramp	1	\$250,000	1	\$250,000	1	\$250,000
Support Facilities								
Bike Parking	\$200	Rack	50	\$10,000	50	\$10,000	50	\$10,000
Capital Subtotal				\$2,292,237		\$2,292,237		\$520,297
Personnel								
Bike & Ped Coordinator	\$50,000	Employee	1.33	\$66,500	1.67	\$83,500	2	\$100,000
Interns	\$14	Hour	1,500	\$21,000	2,000	\$28,000	2,000	\$28,000
Fringe Benefits	\$0			\$39,375		\$50,175		\$57,600
Personnel Subtotal				\$126,875		\$161,675		\$185,600
Annual Total:								
				\$3,505,604		\$3,836,482		\$2,384,544

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Implementation Policies

The city of Milwaukee Bicycle Plan provides the long-term vision for the development of a community-wide bikeway network usable by all residents for all trip types. Implementation of the Plan will take place in small steps over many years. The following strategies and action items are provided to guide Milwaukee toward the vision identified in the Plan.

Projects have been prioritized based on facility type and are listed in Appendix J. This list should be reviewed every fiscal year, with new projects added, completed projects removed, and the priorities revised as conditions change. This strategy also represents an opportunity to correspond with nearby jurisdictions to collaborate on regionally-important walkways and bikeways.

Strategy 1: Strategically Pursue Infrastructure Projects.

Supporting Policies

Action Items

- Policy 1.1 Pursue capital improvements funding or grant funding for higher-priority bicycle and pedestrian improvements first.
- Policy 1.2 In the case where grant requirements or construction in conjunction with another roadway project make construction of a lower priority project possible or required by law, pursue funding sources for that project regardless of priority.
- Policy 1.3 Install approved bicycle and pedestrian projects simultaneous with road improvement projects scheduled in the same area, regardless of the priority placed upon the bicycle or pedestrian project.
- Policy 1.4 Review current posted speeds on major streets; identify opportunities for posted speed reductions, especially on roadways where bicyclists and motorists will share the same lanes.
- Policy 1.5 Publish a public report documenting the status and on-going actions for all bicycle and pedestrian projects at the end of each fiscal year.

Discussion

Milwaukee staff should strategically pursue infrastructure projects. Ideally, staff should pursue capital improvements funding or grant funding for short-term bicycle improvements first. However, if grant requirements or construction in conjunction with another roadway project make construction of a lower priority project possible, then the community should pursue funding sources for that project regardless of priority.

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Strategy 2: Regularly Revisit Project Prioritization.

Supporting Policies

Action Items

Policy 2.1 Annually review and update the Bicycle Plan project and program list.

Policy 2.2 Share updated Bicycle Plan project list with the public and other jurisdictions.

Policy 2.3 Review and update the Plan as needed, at a minimum of every five years.

Discussion

Projects have been prioritized based on facility type and are displayed in Appendix J. This list should be reviewed every fiscal year, with new projects added, completed projects removed, and the priorities revised as conditions change. This strategy also represents an opportunity to correspond with nearby jurisdictions to collaborate on regionally-important walkways and bikeways.

Action Items

Annually review and update the bikeway and walkway project list with input from appointed persons within the city of Milwaukee and other relevant agencies. The updated list should be shared with the public.

Strategy 3: Integrate Bicycle Planning into Milwaukee's Planning Processes.

Supporting Policies

Action Items

Policy 3.1 Incorporate a bicycle facilities checklist into the Plan review process.

Policy 3.2 Adopt a bicycle parking ordinance and other local policies that promote bicycling.

Policy 3.3 Consider adopting a "Complete Streets" policy to ensure that bicycle and pedestrian facilities are included in all major construction and reconstruction projects. Bicycle facilities should be addressed at the project scoping stage.

Policy 3.4 Require sufficient right-of-way to be set aside for bicycle facilities as redevelopment projects occur.

Policy 3.5 Ensure that appropriate bicycle facilities are built in new developments in accordance with this Plan and other relevant plans.

Policy 3.6 Ensure that bicycle infrastructure improvements are funded through a dedicated funding source.

Discussion

This Plan presents a vision for the future of bicycling in Milwaukee. To ensure that the vision is implemented, the Plan must become a living document that is incorporated into the day-to-day activities of planning, design, funding, construction and maintenance in Milwaukee. This plan recommends several ways for bicycle planning to be integrated into the planning process.

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Strategy 4: Implement Education, Encouragement and Enforcement Activities.

Supporting Policies

Action Items

Policy 4.1 Pursue grant funding for higher-priority programs first.

Policy 4.2 Seek funding for other supporting programs as appropriate.

Policy 4.3 Work with schools, youth groups, and other parties to provide education and encouragement programs to Milwaukee residents.

Policy 4.4 Work with the Police Department, media, advocacy and safety groups to create an educational program to educate pedestrians, bicyclists, and drivers of rights, responsibilities and safe practices to share the road comfortably and safely.

Discussion

This Plan presents a vision for the future of bicycling in Milwaukee. To ensure that the vision is implemented, the Plan must become a living document that is incorporated into the day-to-day activities of planning, design, funding, construction and maintenance in Milwaukee. This plan recommends several ways for bicycle planning to be integrated into the planning process.